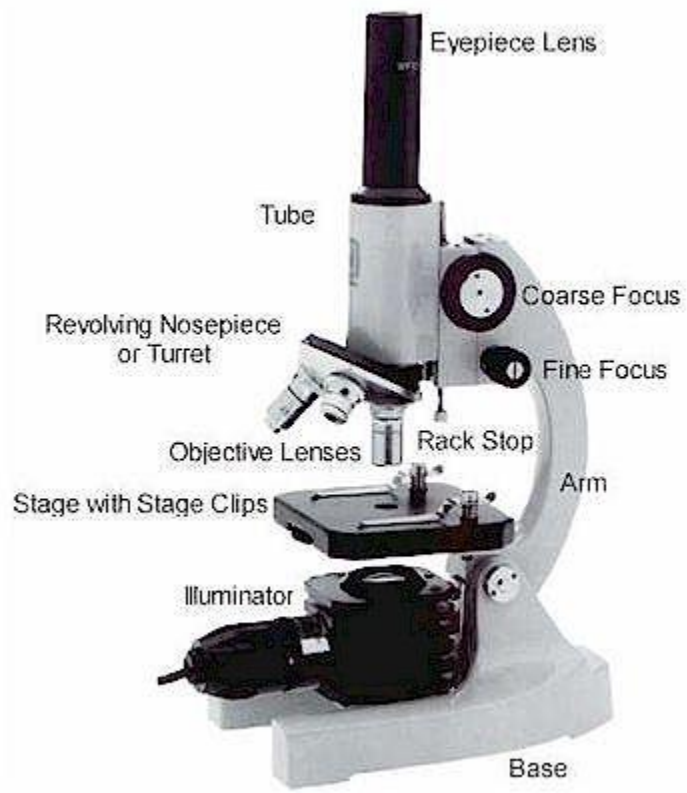
SAMPLES OF STANDARDS STUDENTS ARE LEARNING THIS NINE WEEKS:

7th Grade ELA

STANDARDS: RI.7.1, RI.7.2, RI.7.3, RI.7.4, RI.7.5, RI.7.6, RI.7.7, RI.7.8, W.7.1

7th Grade Reading: Informational Text

Instructional: The Proper Care and Use of a Microscope



What is a microscope? A microscope is a piece of scientific equipment used to view small objects. Microscopes reveal details that are undetectable by the naked eye which make them

very useful in the world of science. Microscopes fall into two distinct categories- light and electron. Light microscopes utilize light to illuminate magnified objects so they can be seen by the human eye. Electron microscopes utilize a stream of electrons to strike an object and magnify it so it can be viewed.

As with most inventions there is some debate over who truly invented the microscope but most credit has been given to Zacharias Janssen a Dutch spectacle maker in the 1850's. No matter who invented the microscope, its importance cannot be downplayed. The microscope is an important tool used in science and research.

It's important to know how each part of a microscope works in order to use it properly. Let's take a look at these different parts and how they operate.

Eyepiece Lens-The eyepiece lens is the lens at the top of the microscope. It is also known as an ocular lens.

Tube- Connects the eyepiece to the objective lenses.

Arm- The arm connects the tube to the base and acts as support between the two parts.

Base- The bottom of the microscope used as support.

Illuminator- The light source used in place of a mirror. In Microscopes that have mirrors, light is reflected up through the bottom of the stage from an external light source.

Platform- The platform located under the objective lens where slides are placed.

Objective lens- The objective lens or lenses are those closest to the object to be magnified.

Revolving nosepiece- Holds two or more objective lenses and allows them to be rotated into place.

Fine focus- Helps bring details into sharper and finer focus.

Course focus- Used to move objective lenses closer to the specimen on the platform.

Care must be taken when handling a microscope because it is a delicate and expensive piece of equipment. In order to prevent dropping or breaking the instrument, always carry a microscope with two hands making sure to support the base and have a firm grip on the arm. Keep the stage clean and always use a glass slide for specimens. In order to avoid crushing the glass slide when focusing, begin with the lens close to the specimen and gradually back off to focus. Finally, keep the microscope covered to prevent the buildup of dust while it is being stored.

How to use a Microscope

Here are the proper steps to follow when using a microscope.

1. Plug in the lamp.

2. Place your specimen on a slide.

3. Adjust the mirror so that it reflects the right amount of light up into the specimen from the light source.

4. Place your specimen slide directly over the center of the glass circle on the stage and secure with the stage clips.

5. With the low power objective lens in place over the slide, use the coarse focus knob to lower the lens as close to the lens as possible.

6. Look through the eyepiece with one eye while closing the other eye. Slowly raise the lens until the focus is relatively clear.

7. Use the fine focus knob to fine-tune the focus.

8. Without changing the focus knobs, switch to the high power objective lens. Once you have switched to high power, use only the fine focus knob to make the image clear.

CCSS.RI.7.1

- Who is credited with inventing the microscope?
  a. John Microscope
  b. Nobody. It was an accidental discovery
  c. Zacharias Janssen
  d. Benjamin Franklin
  Answer: c

CCSS.RI.7.2

- What are two central ideas contained in the excerpt? Choose two.
  a. Microscopes are delicate instruments.
  b. Microscopes are difficult pieces of equipment.
  c. A Dutchman invented the microscope.
  d. Care must be taken when using a microscope.
  Answer: a and d

CCSS.RI.7.3

- Why do you believe the author feels it is important to explain how to care for a microscope?
  a. He just wanted to fill space.
  b. He wants to emphasize how delicate the instrument is and ensure it is handled properly.
  c. He wants to make sure the reader knows what type of microscope he is using.
  d. None of the above.
  Answer: b

CCSS.RI.7.4

- What does the word "tube" mean in the context of the excerpt?
  a. Nothing
  b. A subway
  c. A vessel to hold toothpaste
  d. A connector between the eyepiece and the objective lens
  Answer: d

CCSS.RI.7.5

- How do the instructions on how to use the microscope add to the excerpt?
  a. It provides relevant information for the reader.
  b. It doesn't add anything.
  c. It adds tone to the excerpt
  d. It gives meaning to the excerpt.
  Answer: a

CCSS.RI.7.6

- What is the author's purpose in this excerpt?
  a. To instruct
  b. To entertain
  c. To have the readers go and find information themselves.
  d. All of the above.
  Answer: a

CCSS.RI.7.7

- What other audio/video medium would help illustrate this excerpt better?
  a. A film about Zacharias Janssen.
  b. An audio recording of the text.
  c. A slide show presentation on how to use a microscope.
  d. All of the above
  Answer: c

CCSS.RI.7.8

- Where do you think the author got most of his information about Microscopes?
  a. Personal observation
  b. From personal accounts of others
  c. A film
  d. a and b
  Answer: a

W.7.1

Mutualism

Many of the planet's species depend on each other for survival. Their relationship is called mutualism because the partnership between them is mutually advantageous. In other words, both species benefit from their exchange of resources or services. The most familiar example of mutualism is the relationship between plants and the creatures who spread their pollen, like bees, butterflies and moths. But a mutualistic partnership can involve other forms of life as well.

In one type of mutualism, the two species help each other gain better access to nourishment and energy. A plant may provide a microorganism with energy through photosynthesis, while the microorganism increases the plant's ability to gain nourishment. Lichens, the fuzzy green "plants" that sprout on rocks and tree bark, are a fascinating example of this type of relationship. In truth, the lichen is not a plant at all, and it is not even a single organism. Rather, it is made up of two separate organisms—fungi and an algae—that live together in a mutualistic partnership, providing each other with improved access to resources.

In another kind of mutualistic relationship, one species protects its partner species from parasites or predators. In return, the protector species may receive food or shelter. A particular kind of ant has such a relationship with a type of acacia tree in Central America. The tree provides the ants with food and a place to nest, and in

return, the ants drive away harmful insects and other creatures who might want to dine on the acacia's leaves.

But the mutualism we are most likely to see in our everyday lives is the kind that involves one species receiving food in exchange for carrying away the pollen or seeds of another species. Mutualisms between plants and pollinators involve almost 170,000 plant species and 200,000 animal species. Three-quarters of flowering plants depend on other animals for pollination. The flowering plants produce high-energy nectar that attracts insects, birds, or sometimes mammals. The pollinator species then feeds on the nectar, becoming covered in the flower's pollen as it does so. Flying from flower to flower, the pollinator deposits and picks up pollen all along the way. This helps the plants to reproduce. Bees receive a further benefit from their mutualistic relationship with plants, as they collect waxes and sticky substances from flowers and use these to build their hives.

Humans have come to depend on certain mutualistic partnerships between other species. In fact, we need insect pollinators to produce about a third of the food we eat. Because so much of our food comes from plants that require pollination to reproduce, bees have become a vital part of our agricultural system. Certain commercial crops could not be grown at all without help from bees. Although honeybees are not a native species in the United States, they have become quite common here because they are so highly productive and easy to manage. Commercial farming operations raise them alongside many different crops.

In the past several years, though, a mysterious ailment has afflicted honeybee populations in the United States. Beekeepers have been losing about 30% of their hives' populations each year. Although in most cases, the hives still have honey, very young bees, and a queen, the adult bees are nowhere to be found. Scientists call the problem Colony Collapse Disorder (CCD). No one can figure out the cause, though. Some speculate that it is due to parasites, viruses, or bacteria. Another possible factor is unusually warm winter weather. Poor nutrition, overcrowding, and exposure to pesticides have also been cited as potential causes as well. But research has not been able determine the reasons for CCD with any certainty. The disappearance of the honeybees remains a mystery. Therefore, it is very difficult to know exactly how to address the problem.

However, honeybees—and their mutualistic relationships with plants—are such a necessary part of our food supply that even unproven solutions are better than no solutions. Farmers have been advised to provide supplemental nourishment to improve honeybee health when nectar supplies are low. And the public is being encouraged to use pesticides very carefully. In particular, they should avoid spraying pesticides during daytime hours when bees are most likely to be out gathering food. Planting more bee-friendly plants, like red clover and bee balm, is another possible remedy. Because we depend on honeybees almost as much as the plants do, we need to do everything in our power to make sure their hives are healthy and productive.

Mutualism suggests that nature has a way of looking after its own. It takes a long time for species to develop a mutualistic relationship. The bonds that tie certain species together have survived many tests over the years. Bees have been pollinating flowers for much longer than we have been growing plants for food. With hope, CCD is a passing phenomenon and they will be pollinating flowers for many, many more years.

While there are many hypotheses, scientists still cannot agree on what is causing Colony Collapse Disorder (CCD). The passage "Mutualism" offers many possible reasons why this problem is happening. Your task will be to write an essay arguing which reason you think is causing the decline in the honeybee population, as well as possible solutions to the problem. Be sure to use evidence from the passage to support your argument.

Your essay will be scored on the following criteria:

- **consistent focus and logical organization**
- **use of details from the passage that support your argument**
- **use of language that is appropriate for your audience and purpose**